SPEChpc™ 2021 Tiny Result

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Transtec

(Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf)

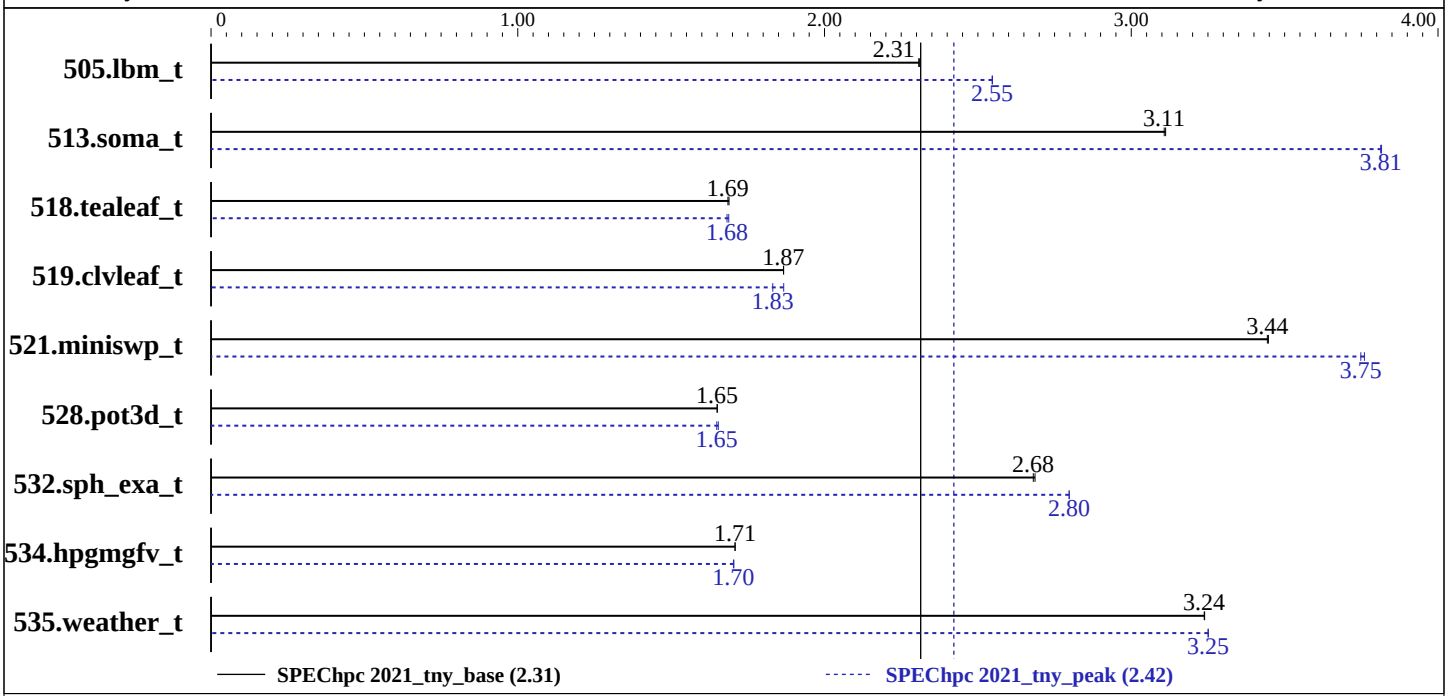
Hemera: Intel Server Board S2600BPB (Intel Xeon Gold 6148)

SPEChpc 2021_tny_base = 2.31

SPEChpc 2021_tny_peak = 2.42

hpc2021 License: 065A
Test Sponsor: Helmholtz-Zentrum Dresden - Rossendorf
Tested by: Helmholtz-Zentrum Dresden - Rossendorf

Test Date: Sep-2021
Hardware Availability: Jul-2017
Software Availability: Oct-2020



Results Table

Benchmark	Base									Peak								
	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Model	Ranks	Thrds/Rnk	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
505.lbm_t	OMP	2	20	**975**	**2.31**	974	2.31			OMP	2	40	**884**	**2.55**	883	2.55		
513.soma_t	OMP	2	20	1189	3.11	**1191**	**3.11**			OMP	2	40	970	3.82	**970**	**3.81**		
518.tealeaf_t	OMP	2	20	977	1.69	**979**	**1.69**			OMP	2	20	978	1.69	**981**	**1.68**		
519.clvleaf_t	OMP	2	20	**884**	**1.87**	884	1.87			OMP	2	20	884	1.87	**901**	**1.83**		
521.miniswp_t	OMP	2	20	**465**	**3.44**	464	3.45			OMP	2	40	**427**	**3.75**	426	3.76		
528.pot3d_t	OMP	2	20	**1288**	**1.65**	1287	1.65			OMP	2	20	1285	1.65	**1289**	**1.65**		
532.sph_exa_t	OMP	2	20	**727**	**2.68**	726	2.69			OMP	2	40	**697**	**2.80**	697	2.80		
534.hpgmgfv_t	OMP	2	20	**688**	**1.71**	688	1.71			OMP	2	20	**690**	**1.70**	689	1.70		
535.weather_t	OMP	2	20	996	3.24	**996**	**3.24**			OMP	2	20	992	3.25	**992**	**3.25**		

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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Test Date: Sep-2021
Hardware Availability: Jul-2017
Software Availability: Oct-2020

Hardware Summary

Type of System:	Homogenous Cluster
Compute Node:	Compute Node
Interconnect:	Infiniband (EDR)
Compute Nodes Used:	1
Total Chips:	2
Total Cores:	40
Total Threads:	80
Total Memory:	384 GB
Max. Peak Threads:	40

Software Summary

Compiler:	Intel Parallel Studio XE 2020
MPI Library:	--
Other MPI Info:	--
Other Software:	None
Base Parallel Model:	OMP
Base Ranks Run:	2
Base Threads Run:	20
Peak Parallel Models:	OMP
Minimum Peak Ranks:	2
Maximum Peak Ranks:	2
Max. Peak Threads:	40
Min. Peak Threads:	20

Node Description: Compute Node

Hardware

Number of nodes:	1
Uses of the node:	compute
Vendor:	Intel
Model:	Intel Server Board S2600BPB
CPU Name:	Intel Xeon Gold 6148
CPU(s) orderable:	1 or 2 per node
Chips enabled:	2
Cores enabled:	40
Cores per chip:	20
Threads per core:	2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.7 GHz
CPU MHz:	2400
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	28160 KB I+D on chip per chip
Other Cache:	None
Memory:	384 GB (12 x 32GB 2Rx4 PC4-2666V-RB2-12)
Disk Subsystem:	1 x 500 GB SSD
Other Hardware:	None
Accel Count:	0
Accel Model:	--
Accel Vendor:	--
Accel Type:	--
Accel Connection:	--
Accel ECC enabled:	--
Accel Description:	--
Adapter:	Mellanox MT4115
Number of Adapters:	2
Slot Type:	PCI-Express 3.0 x16
Data Rate:	100 Gb/s
Ports Used:	2
Interconnect Type:	EDR Infiniband

Software

Accelerator Driver:	--
Adapter:	Mellanox MT4115
Adapter Driver:	--
Adapter Firmware:	12.28.2006
Operating System:	CentOS Linux release 7.9.2009 (Core) 3.10.0-1160.6.1.el7.x86_64
Local File System:	xfs
Shared File System:	GPFS Version 5.0.5.0 6 NSD (vendor: NEC) 5 building blocks (vendor: NetApp): 2x (240 x 8 TB HDD) 1x (180 x 12 TB HDD) 1x (240 x 16 TB HDD) 1x (120 x 16 TB HDD)
System State:	Multi-user, run level 3
Other Software:	None

Interconnect Description: Infiniband (EDR)

Hardware

Vendor:	Mellanox Technologies
Model:	Mellanox SB7790
Switch Model:	36 x EDR 100 Gb/s
Number of Switches:	2
Number of Ports:	36
Data Rate:	100 Gb/s
Firmware:	--
Topology:	Mesh (blocking factor: 8:1)
Primary Use:	MPI Traffic, GPFS

Software

: --

Submit Notes

```
The config file option 'submit' was used.
  MPI startup command:
    mpiexec.hydra --bind-to socket -np $ranks $command
```

General Notes

```
This benchmark result is intended to provide perspective on
past performance using the historical hardware and/or
software described on this result page.

The system as described on this result page was formerly
generally available.  At the time of this publication, it may
not be shipping, and/or may not be supported, and/or may fail
to meet other tests of General Availability described in the
SPEC HPG Policy document, http://www.spec.org/hpg/policy.html

This measured result may not be representative of the result
that would be measured were this benchmark run with hardware
and software available as of the publication date.
```

Compiler Version Notes

```
==============================================================================
 CC  505.lbm_t(base, peak) 513.soma_t(base, peak) 518.tealeaf_t(base, peak)
     521.miniswp_t(base, peak) 534.hpgmgfv_t(base, peak)
------------------------------------------------------------------------------
icc (ICC) 19.1.3.304 20200925
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

(Continued on next page)

Compiler Version Notes (Continued)

```
==============================================================================
 CXXC 532.sph_exa_t(base, peak)
------------------------------------------------------------------------------
icpc (ICC) 19.1.3.304 20200925
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  519.clvleaf_t(base, peak) 528.pot3d_t(base, peak) 535.weather_t(base,
     peak)
------------------------------------------------------------------------------
ifort (IFORT) 19.1.3.304 20200925
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
mpiicc

C++ benchmarks:
mpiicpc

Fortran benchmarks:
mpiifort

Base Portability Flags

513.soma_t: -DSPEC_NO_VAR_ARRAY_REDUCE
521.miniswp_t: -DUSE_KBA -DUSE_ACCELDIR
532.sph_exa_t: -DSPEC_USE_LT_IN_KERNELS

Base Optimization Flags

C benchmarks:
-Ofast -xCORE-AVX512 -qopenmp -ansi-alias

C++ benchmarks:
-Ofast -xCORE-AVX512 -qopenmp -ansi-alias

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Base Optimization Flags (Continued)

Fortran benchmarks:
`-Ofast -xCORE-AVX512 -qopenmp`

Peak Compiler Invocation

C benchmarks:
`mpiicc`

C++ benchmarks:
`mpiicpc`

Fortran benchmarks:
`mpiifort`

Peak Portability Flags

513.soma_t: `-DSPEC_NO_VAR_ARRAY_REDUCE`
521.miniswp_t: `-DUSE_KBA -DUSE_ACCELDIR`
532.sph_exa_t: `-DSPEC_USE_LT_IN_KERNELS`

Peak Optimization Flags

C benchmarks:
`-Ofast -xCORE-AVX512 -qopenmp -ansi-alias`

C++ benchmarks:
`-Ofast -xCORE-AVX512 -qopenmp -ansi-alias`

Fortran benchmarks:
`-Ofast -xCORE-AVX512 -qopenmp`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/hpc2021/flags/EM64T_Intel_flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/hpc2021/flags/EM64T_Intel_flags.xml`

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

Tested with SPEChpc2021 v1.0.2 on 2021-09-17 06:08:47-0400.
Report generated on 2023-08-25 19:03:19 by hpc2021 PS formatter v1.0.3.
Originally published on 2021-10-27.